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COMPLETE SPECIFICATION

Improvements in or relating to Mouth Wash Powders

We, DEUTSCHE GOLD- UND SILBER-SCHNEIDANSTALT VORMALS ROESSLER, of Weissfrauenstrasse, 7/9, Frankfurt a.M., Germany, a Body Corporate organised under the laws of Germany, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:

10 This invention relates to mouth wash powders.

The mouth wash powders of this invention comprise soluble, stabilised, active oxygen-yielding compounds, such as urea-hydrogen peroxide, and the like, admixed with silver-containing compounds, for example in the form of silver salts, and with advantage, acid substances, preferably organic acids, in addition.

20 The characteristic property of the mouth wash powders according to this invention is that, on use, the disinfecting and cleansing action of the active oxygen-yielding compound is supplemented by the permanent action exerted by the silver, which has been found to deposit especially on injured parts of the mouth cavity.

30 The mouth wash powders according to this invention can be kept for a practically unlimited period, without losing their active oxygen content or without their disinfecting properties being diminished.

35 It has already been proposed to prepare a germicidal product containing silver in a particularly reactive form by mixing silvered silica gel, which is coated with a colloidal silver skin by treating silica gel with silver nitrate solution, formaldehyde and alkali and by subsequent drying, in a dry state with solid and stabilised superoxide (for instance with a hydrogen peroxide-urea compound), the function of which is to corrode and consequently increase the surface of the silver.

45 For the production of the mouth wash powders, water-soluble organic or inorganic, active oxygen-yielding compounds, such as urea-hydrogen peroxide, alkali peroxide-pyrophosphate, alkali perborates, alkali percarbonates and the like, which have been stabilised in known manner, for example with magnesium silicate, are employed. The active oxygen-yielding compounds are preferably freed

from any water of crystallisation present. Stabilised sodium perborate, which has been freed by drying from water of crystallisation, has, for example, proved to be very suitable. The silver may be employed in the form of organic silver salts, for example silver acetate, silver benzoate, the silver salt of p-hydroxybenzoic acid or silver salicylate, in the form of inorganic salts, for example silver nitrate or silver sulphate, or in the form of complex silver compounds, for example the complex compound of silver chloride and ammonia. Silver salts, which themselves possess disinfecting effects, or silver compounds, which are decomposed under the conditions arising during use of the mouth washes, or on addition of water when preparing the mouth washes, with precipitation of silver in a state of fine division, may be employed. Silver salts, the acids of which themselves exert advantageous, for example disinfecting, effects, may also be advantageously employed.

50 The quantities of silver-containing compounds in the mouth wash powders may vary within wide limits. Admirable results have been obtained with silver contents of about 0.5 to 3%, preferably about 1%, calculated on the total mixture. The finely divided silver, which is precipitated from such mixtures, exerts an oligodynamic action, which is further increased to a considerable extent by the co-operation of the active oxygen.

55 Acids, particularly organic acids, such as citric acid, tartaric acid and the like, may also with advantage be added to the mixture of active oxygen-yielding compounds and silver compounds. Inorganic acid substances, such as boric acid, phosphoric acid, acid phosphates and the like, may however also be employed as additions.

60 It is essential for the efficient action of the mouth washes according to this invention that the evolution of the gaseous oxygen from the powder, on adding the same to water, should only proceed slowly and should only take place to a substantial extent when the mouth washes are subjected to the conditions prevailing in the mouth, such as elevated temperatures, presence of enzymes and the like. By the addition of acids or acid substances it

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is possible, apart from other advantages, for example with regard to improvement in taste, refreshing effect and the like, to counteract too rapid decomposition and evolution of oxygen and accordingly to facilitate handling of the powder and to improve the effect thereof. It has proved to be advantageous to add only such quantities of acid substances as are insufficient for effecting complete neutralisation of the alkaline oxygen-evolving compound, for example perborate, to the intimate mixture of active oxygen-yielding compounds and silver compounds. 40-60% of the quantity of acid which would be necessary for effecting complete neutralisation, may, for example, be added. The presence of acid substances offers the further advantage that the silver is precipitated in the mouth cavity in a state of fine division, whereby the effect is increased.

A mouth wash powder according to the invention may, for example, have the following composition:

30 gms. of dehydrated sodium perborate ($\text{NaBO}_2 \cdot \text{H}_2\text{O}_2$), 1.6 gms. of the silver salt of p-hydroxybenzoic acid and 11.25 gms. of tartaric acid. The mouth wash powder is prepared by intimately mixing the components. Sweetening substances, for example saccharine sugar and the like, as well as perfumes, such as aniseed oil, peppermint oil and the like may, if desired, be incorporated with the powder. The powder may be applied in the usual manner by dissolving in water before use.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. Mouth wash powders comprising soluble, stabilised active oxygen-yielding compounds, such as urea-hydrogen peroxide, and the like, admixed with silver-containing compounds, for example in the form of silver salts and, with advantage, acid substances, preferably organic acids, such as tartaric acid, citric acid and the like, in addition.

2. A mouth wash powder comprising a soluble, stabilised, alkaline, active oxygen-yielding compound, for example in alkali perborate containing no water of

crystallisation, a silver-containing compound and an acid substance preferably in a quantity insufficient for effecting complete neutralisation of the alkaline, active oxygen-yielding compound, for example an acid in a quantity amounting to 40-60% of the amount necessary for effecting complete neutralisation.

3. Mouth wash powders as claimed in claim 1 or 2, characterised by a silver content of about 0.5 to 3%, preferably 1%, calculated on the total mixture.

4. Mouth wash powders as claimed in any of the preceding claims, characterised in that silver is present in the form of a salt of an acid, which itself has a disinfecting action, such as p-hydroxybenzoic acid.

5. A process for the preparation of the mouth wash powders claimed in any of the preceding claims, which consists in stabilising organic or inorganic water-soluble compounds or salts containing active oxygen, which have preferably been freed from any water of crystallisation present, by the addition of stabilising agents, such as magnesium silicate, and mixing the stabilised compounds or salts with acids, for example tartaric acid, citric acid or the like, and with silver-containing compounds, for example in the form of salts, particularly of salts of acids, which themselves have a disinfecting action.

6. A process as claimed in claim 5, wherein alkali perborate is freed from its water of crystallisation, stabilised and intimately mixed with an acid in a quantity amounting to 40-60% of the amount necessary for effecting complete neutralisation of the alkali perborate, and with silver-containing compounds, for example a silver salt, preferably of an acid, which itself has a disinfecting action.

7. Mouth wash powders substantially as described with reference to the example given.

Dated this 1st day of December, 1933.

H. DOUGLAS ELKINGTON,
Consulting Chemist and Chartered
Patent Agent,
20 to 23, Holborn, London, E.C.1,
Agent for the Applicants.